Claims

1. An induction heater comprising:

a heating coil operable to inductively heat a load with a magnetic field, the load being made of non-magnetic, metallic material having a small resistance;

a high-frequency power source supplying a high-frequency current to the heating coil;

a heating output detector for detecting a heating output of the heating coil;

a first detector operable to measure a period of time from a time the heating output drops to a first level smaller than a predetermined level, to a time the heating output increases to a second level; and

a controller operable to

control the high-frequency power source according to the heating output detected by the first detector so that the heating output becomes the predetermined level and,

control the high-frequency power source by detecting, based on the measured period, a displacement of the load due to the magnetic field.

2. The induction heater according to claim 1, wherein the controller is operable to reduce the heating output when judging that the load is displaced by an ascending force produced by the magnetic field.

3. The induction heater according to claim 2, further comprising a load detector operable to, in a case that the load heated by the heating coil is removed, before the controller reduces the heating output when judging that

the load is displaced, detects that a heating operation is performed while the load does not exists, and stops the heating output of the heating coil.

4. The induction heater according to claim 3, wherein the controller is operable to

upon detecting that the load is displaced, reduce the heating output for a first period of time, and then, increase the heating output gradually, and

upon detecting, from an output of the load detector, that the load is removed, decrease the heating output for a second period of time longer than the first period, and then, increase the heating output gradually.

5. The induction heater according to claim 2, wherein the controller is operable to stop the heating output upon judging that the load is displaced by an ascending force produced by the magnetic field.

6. The induction heater according to claim 1, wherein the controller is operable to judge that the load is displaced by an ascending force produced by the magnetic field if the measured period exceeds a predetermined period of time.

7. The induction heater according to claim 1, wherein the controller is operable to reduce decrease the heating output when the measured period exceeds a predetermined period of time.

8. The induction heater according to claim 7, wherein the controller is operable to stop the heating output when the measured period exceeds a

predetermined period.

9. The induction heater according to claim 1, further comprising a display for, when the controller judges that the load is displaced by an ascending force produced by the magnetic field, displaying an indication of it visually.

10. The induction heater according to claim 1, further comprising a notifying unit for, when the controller judges that the load is displaced by an ascending force produced by the magnetic field, notifying it audibly.

11. The induction heater according to claim 1, further comprising

a second detector for detecting a change of an increase with time of the detected heating output when the heating output increases,

wherein the controller is operable to

increase the heating output gradually, and

reduce the heating output when the second detector detects the change of the increase with time.

12. The induction heater according to claim 11, wherein the controller is operable to

decrease the heating output when detecting that the load is displaced by an ascending force produced by the magnetic field, and then increase the heating output gradually, and

reduce the heating output according to the heating output at a time the second detector detects that the load is removed.

13. The induction heater according to claim 1, wherein the second level is equal to the predetermined level.

14. The induction heater according to claim 1, wherein the second level is smaller than the predetermined level.

15. The induction heater according to claim 14, wherein the second level is larger than the first level.

16. The induction heater according to claim 1, wherein the high-frequency power source comprises one of an inverter and a converter.

17. The induction heater according to claim 1, wherein the heating output detector detects the heating output by measuring at least one of a current input to the high-frequency power source, a power input to the high-frequency power source, a current flowing in the heating coil, and a voltage or a current of a component of the high-frequency power source.